

SOV/124-57-7-7575

Translation from: Referativnyy zhurnal. Mekhanika, 1957, Nr 7, p 16 (USSR)

AUTHORS: Kosterin, Yu. I., Kragel'skiy, I. V.

TITLE: Why Automobile Clutches Grab and Chatter (Prichiny zakhvatyvaniya i vibratsiy v avtomobil'nom stseplenii)

PERIODICAL: V sb.: Konstruirovaniye, issledovaniya, ispytaniya avtomobiley. Nr 2, Moscow, Mashgiz, 1956, pp 64-76

ABSTRACT: The grabbing and self-sustaining chatter of automobile clutch mechanisms upon engagement are accounted for in terms of the relationship found to exist between the friction coefficient of the two contacting surfaces, on the one hand, and the slippage speed and duration of static contact, on the other. Included are photographs of testing devices, and an account is given of methods for determining the friction coefficient of friction materials.

K. S. Kolesnikov

Card 1/1

Copy 2
KOSTERIN, Yu. I.: Master Tech Sci (diss) -- "Mechanical relaxation oscillations in dry friction". Moscow, 1958. 15 pp (Inst of Machine Sci Acad Sci USSR), 150 copies (KL, No 4, 1959, 126)

~~KOSTERIN, Yu. I.~~

28(5) **PHASE I BOOK EXPLOITATION** SOV/2632

Abdumaliyev **Abdumaliyev**. Institut mashinovedeniya
 Trudovye i imena v mashinostroyeniye, sbornik XIV (Friction and Wear
 in Machinebuilding, Collection 14) Moscow, Izdatel'stvo Mashinostroyeniya, 1958.
 354 p. Karta slip inserted, 4,000 copies printed.

Ed.: M.M. Khrushchov, Professor; **Ed. of Publishing House:**
M.A. Babich, **Tech. Ed.:** **V.V. Zelenkov**, Editorial
Board: **Ye.M. Olt'yar**, Professor, **A.M. Dyachkov**, Professor,
I.V. Kravtsov, Professor, **A.D. Kurikova**, Candidate of
 Technical Sciences, **L.Yu. Pruzhanskiy**, Candidate of Technical
 Sciences, and **M.M. Khrushchov**, Professor.

PURPOSE: This book is intended for scientists, engineers, and
 technicians in the field of machine manufacture and operation,
 and for instructors in schools of higher education (university).

CONTENTS: This collection of articles presents the results
 of new investigations in the field of wear, friction, and
 lubrication. The subjects discussed include structural
 changes in the surface layer of metals in friction,
 investigation of friction-brake materials, and theoretical
 investigations in the field of dry friction and friction
 with boundary and complete friction. For the abstract of
 each article see the Table of Contents. A bibliography of
 Soviet and non-Soviet materials on friction, wear and lubri-
 cation for 1954-55 prepared by **Ye.O. Vildt** is included.

Grozin, B.D., and V.M. Smirnov-Oelik. Investigating the
 Condition of the Surface Layer of Metal Using an Electron
 Microscope
 The use of electron microscopes makes it possible
 to investigate changes taking place on surfaces and
 in surface layers of metal parts without preparation
 of the microsections regardless of the shape and size
 of a part.

Goudchenko, Y.M., and I.V. Kravtsov. Basis for Developing
 Friction Materials for High-tension Brakes
 The authors present generalized results of their
 experimental investigations in developing a theory
 of friction materials.

Konstantinov, Yu.I., and I.V. Kravtsov. Relaxation Vibrations
 in Elastic Friction Systems
 The author analyzes the previously proposed "stick-
 slip" theory of the process of friction and establishes
 a new theory determining conditions which prevent
 "stick-slip" processes in friction.

Marochkin, Y.M. Calculation of the Coefficient of Friction
 Applied to Two Rough Surfaces
 The author presents a theory of friction applied
 to two rough surfaces in contact. This is a fur-
 ther development of the theory proposed by **I.V.**
Kravtsov.

Martynovich, S.O. On the Theory of Oil Film in a Dynamically-
 Loaded Bearing describes results of his experimental
 investigations of lubricating oil-film pressures
 in the crank shaft bearings of a diesel engine.
 Use was made of strain gages installed in shaft
 journals under various operating conditions.

KOSTERIN, Yu.I.; KRAGEL'SKIY, I.V.

Relaxation vibrations in elastic friction systems. Tren. i izn.
mesh. no. 12:119-143 '58. (MIRA 11:8)

(Friction)
(Vibration)

22229

S/124/61/000/003/027/028

A005/A105

24.4100

AUTHOR: Kosterin, Yu. I.

TITLE: The influence of the physico-mechanical properties of the materials of touching components on the mechanical relaxation oscillations in elastic friction systems

PERIODICAL: Referativnyy zhurnal, Mekhanika, no. 3, 1961, 51-52, abstract 3V418
V sb.: 2-ya Nauchno-tekhn. konferentsiya aspirantov i mladsh. nauchn. sotrudnikov (In-t mashinoved. AN SSSR). v. 2, Moscow, 1959, 35-45)

TEXT: An experimental and theoretical investigation was made of the influence of the rheological characteristics of touching components on the friction characteristics of a friction pair. The experiments were conducted with low motion speeds of the forced-moving system. The theoretical analysis of the experimental results is carried out on the assumption that the one of the rubbing surfaces is absolutely smooth and the nature of the friction contact is discrete with uniform distribution of the individual protrusions on the rough surface. As a fundamental physical relation, the equation of the elastic-viscous body with two rheological parameters in the sense of A. Yu. Ishlinskiy (Dokl. AN SSSR, 1940, Card 1/2

KOSTERIN, Yu. I.

REPORT presented at the 1st All-Union Congress of Theoretical and Applied Mechanics,
Moscow, 27 Jan - 3 Feb '60.

134. A. A. Il'yushin (Moscow): Problems of the theory of plasticity under combined loading.
135. I. I. Zhurav (Tashkent): Elastic-plastic vibrations of rods of non-circular cross section.
136. V. A. Kozlov (Leningrad): The forced non-linear flexural vibrations of a homogeneous prismatic rod and a very long rectangular plate.
137. A. A. Kozlov (Leningrad): On a method of solving the equations of "strongly non-linear" elastic isotropic medium in the presence of a magnetic field.
138. A. A. Kozlov, V. A. Kozlov (Leningrad): An engineering method for the design of thin prismatic shells.
139. A. A. Kozlov (Leningrad): The distribution of vertical compressive stresses and strains in thin plates in homogeneous or neutralized cells.
140. A. A. Kozlov (Leningrad): Bending of multilayer plates of variable stiffness.
141. A. A. Kozlov (Leningrad): The effect of aging and anisotropy on the study of concrete.
142. A. A. Kozlov (Leningrad): On the time of response in creep.
143. A. A. Kozlov (Leningrad): On some mathematical principles and methods in the theory of plasticity.
144. A. A. Kozlov (Leningrad): A procedure of determining an impact "medium diagram" for large deformations.
145. A. A. Kozlov (Leningrad): Some generalizations of the formulae of elastostatics and elastodynamics in the presence of plasticity for their solution.
146. A. A. Kozlov (Leningrad): On the elastic equilibrium of thin elastic orthotropic plates.
147. A. A. Kozlov (Leningrad): Stresses of the surfaces of plates for the stability of an elastic medium in thin plates and shells.
148. A. A. Kozlov (Leningrad): Stability of plates and shells of variable thickness in a three-dimensional incompressible medium.
149. A. A. Kozlov (Leningrad): Elastic stability of cylindrical and spherical shells.
150. A. A. Kozlov (Leningrad): The influence of initial imperfections on the stability of thin elastic cylindrical shells under axial compression.
151. A. A. Kozlov (Leningrad): Elastic stability and post-buckling behavior.
152. A. A. Kozlov (Leningrad): The influence of initial imperfections on the stability of thin elastic cylindrical shells under axial compression.
153. A. A. Kozlov (Leningrad): The influence of initial imperfections on the stability of thin elastic cylindrical shells under axial compression.
154. A. A. Kozlov (Leningrad): The influence of initial imperfections on the stability of thin elastic cylindrical shells under axial compression.
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163. A. A. Kozlov (Leningrad): The influence of initial imperfections on the stability of thin elastic cylindrical shells under axial compression.
164. A. A. Kozlov (Leningrad): The influence of initial imperfections on the stability of thin elastic cylindrical shells under axial compression.
165. A. A. Kozlov (Leningrad): The influence of initial imperfections on the stability of thin elastic cylindrical shells under axial compression.
166. A. A. Kozlov (Leningrad): The influence of initial imperfections on the stability of thin elastic cylindrical shells under axial compression.
167. A. A. Kozlov (Leningrad): The influence of initial imperfections on the stability of thin elastic cylindrical shells under axial compression.

PHASE I BOOK EXPLOITATION

SOV/5722

Kosterin, Yuriy Iosifovich

Mekhanicheskiye avtokolebaniya pri sukhom trenii (Mechanical Self-Excited Vibrations Caused by Dry Friction) Moscow, Izd-vo AN SSSR, 1960. 74 p. Errata printed on the inside of back cover. 4,000 copies printed.

Sponsoring Agency: Akademiya nauk SSSR. Institut mashinovedeniya.

Resp. Ed.: I. V. Kragel'skiy, Doctor of Technical Sciences, Professor;
Ed. of Publishing House: P. F. Zolotov; Tech. Ed.: L. V. Yepifanova.

PURPOSE: This book is intended for researchers concerned with the interaction of frictional and elastic forces in mechanisms, and for mechanical engineers engaged in machine design.

COVERAGE: The book presents a phenomenological and analytical study of self-excited vibrations caused by friction in mechanical systems. Special attention is given to the rheological process which takes place in frictional contact. Very sensitive experiments are made to establish the effects of the parameters which influence the process, such as: the

Card 1/4

Mechanical Self-Excited Vibrations (Cont.)

SOV/5722

duration of the nonmoving contact during the cycle, the effect of the relative velocity on the kinetic friction coefficient, normal pressure, temperature, etc. On the basis of these experiments, equations and analytical procedures are developed for representing the detailed frictional behavior under unsteady-state conditions and as a function of time. A special chapter analyzes the effects of the physical and mechanical properties of various materials on the generation of relaxation oscillations. According to the editor's preface, this is the first time that such a detailed analysis has been made. It is shown that the analytical treatment provides a good representation of the experimentally observed phenomena and permits accurate prediction of the "chattering" behavior of mechanical systems. The methods presented are said to provide an important tool which should greatly assist mechanical engineers attempting to eliminate chattering in the design of clutches, brakes, metal-cutting machines and in other mechanisms in which frictional and elastic forces interact. No personalities are mentioned. There are 56 references: 46 Soviet, 7 English, 2 German, and 1 Dutch.

TABLE OF CONTENTS:

Editor's Preface

Brief Review of [Previous] Investigations

Card 2/4

3

5

Kosterin, Yu. I.

"Relaxation Oscillations and the Nature of Change of the Friction Force in Frictional Contact" p. 65

Sukhoye i granichnoye treniye. Friksionnyye materialy (Dry and Boundary Friction. Friction Materials) Moscow, Izd-vo AN SSSR, 1960. 302 p. Errata slip inserted. 3,500 copies printed. (Series: Its: Trudy, v. 2)

Sponsoring Agency: Akademiya nauk SSSR. Institut mashinovedeniya. Resp. Ed.: I. V. Kragel'skiy, Doctor of Technical Sciences, Professor; Ed. of Publishing House: K. I. Grigorash; Tech. Ed.: S. G. Tikhomirova.

The collection published by the Institut mashinovedeniya, AN SSSR (Institute of Science of Machines, Academy of Sciences USSR) contains papers presented at the III Vsesoyuznaya konferentsiya po treniyu i iznosu v mashinakh (Third All-Union Conference on Friction and Wear in Machines, April 9-15, 1958).

S/122/60/000/008/006/006/xx
A161/A029

AUTHORS: Kosterin, Yu.I., Candidate of Technical Sciences, Sidorenko, G.S.,
Engineer

TITLE: Statical Friction Characteristics of Nonmetallic Friction Couples 17

PERIODICAL: Vestnik mashinostroyeniya, 1960, No. 8, pp. 38-41

TEXT: In view of not always satisfactory work of plastics in machines and insufficient test data and a great variety of test device designs used, methods of finding fundamental test rules are discussed. Formulas derived in six existing works (Ref. 1-6) are used. The authors carried out experiments with the couples plexiglas-steel "45", plexigals-copper, friction material 6-KX -1 (6-KKh-1)-steel "45" (and lead-copper for comparison). The test device used, a ГП-1 (GP-1) apparatus permits tests to be made with a slider speed of 0.05-3.0 mm/sec and normal load of 0.6-10 kg produced by exchangeable weights. The use of different test specimen shapes is possible. The authors chose three 5-mm diameter metal legs with polished friction surface and the other material in the form of plates. The formula (11) is stated to reflect sufficiently closely the real processes in the formation of friction contact and the effect of

Card 1/2

VILLERT, A.F.; KOSTERIN, Yu.I.

Determination of the total relative absorptive capacity of
an asbestos brake lining. Kauch. i rez. 19 no. 11;24-28
N '60. (MIRA 13:11)

(Asbestos)

KOSTERIN, Yu.I.; VASIL'YEV, I.I.

Causes of squeaking and possibilities of its prevention in
automobile brakes. Avt.prom. 28 no.12:21 D '62. (MIRA 16:1)

1. Vsesoyuznyy nauchno-issledovatel'skiy i konstruktorsko-tekhnologicheskiy institut asbestovykh tekhnicheskikh izdeliy (VNIIATI).
(Automobiles---Brakes)

KRAGEL'SKIY, Igor' Viktorovich, doktor tekhn. nauk, prof. Prinsipali
uchastiye: TROYANOVSKAYA, G.I., kand. tekhn. nauk; DEMKIN, N.B.,
kand. tekhn. nauk; KOSTERIN, Yu.I., kand. tekhn. nauk; KUDINOV,
V.A., kand. tekhn. nauk; GARKUNOV, V.I., inzh., red.;
BYSTRITSKAYA, V.V., red. izd-va; TIKHANOV, A.Ya., tekhn. red.;
SOKOLOVA, T.F., tekhn. red.

[Friction and wear] Trenie i iznos. Moskva, Mashgiz, 1962. 382 p.
(MIRA 15:3)

(Friction) (Mechanical wear)
(Lubrication and lubricants)

KOSTERIN, YU. I.

PHASE I BOOK EXPLOITATION

SOV/6217

Kragel'skiy, Igor' Viktorovich, Doctor of Technical Sciences, Professor

Treniye i iznos (Friction and Wear). Moscow, Mashgiz, 1962. 382 p.
Errata slip inserted. 11,000 copies printed.

Reviewer: D. N. Garkunov, Candidate of Technical Sciences; Ed.:
V. I. Kumanin, Engineer; Ed. of Publishing House: V. V. Bystritskaya; Tech. Eds.: A. Ya. Tikhanov and T. F. Sokolova; Managing
Ed. for Literature on General Engineering: A. P. Kozlov, Engineer.

PURPOSE: This book is intended for scientific workers and engineers engaged in the development of friction and antifriction materials and for designers and specialists in the operation and repair of machines.

COVERAGE: The book deals with the analysis of various types of friction and wear and with calculations relating to certain processes characterizing them. Methods of testing for friction and wear are

Card 1/12

3

Friction and Wear

SOV/6217

reviewed, and basic data on friction and antifriction materials discussed. The author acknowledges the assistance and cooperation of: V. A. Kudinov; G. I. Troyanovskaya, Candidate of Technical Sciences, who participated in writing Ch. III and Ch. X; N. B. Demkin, Candidate of Technical Sciences, who participated in writing Ch. II; Yu. I. Kosterin, Candidate of Technical Sciences, who participated in writing Ch. VII; and V. A. Kudinov, Candidate of Technical Sciences, who wrote Ch. IX. Each chapter is accompanied by references, mostly Soviet.

TABLE OF CONTENTS:

Introduction	3
Ch. I. General Characteristics of the Process of Friction and Wear	
Contact of two solid bodies	5
Interaction of surfaces. Dual nature of friction	5
	7

Card 2/2

3

Friction and Wear

SOV/6217

Review of completed investigations on sliding friction	191
On the nature of sliding friction	197
Sliding friction in the case of imperfect elasticity	202
Bibliography	207
Ch. VII. Rheological Phenomena in Friction and Mechanical Relaxation Oscillations	210
Processes of deformation of individual ridges in time.	
Elastic and viscous properties of the friction junction	210
Effect of duration of static contact on the actual contact area and the force of friction	217
Mechanical relaxation oscillations	220
Calculation of relaxation oscillations	224
Bibliography	234
Ch. VIII. Boundary Friction	236
Present views on the nature of boundary lubrication	236

Card ~~8/12~~

3/3

FYZHEVICH, L.M., doktor tekhn. nauk, prof.; KOSTERIN, Yu.I.,
kand. tekhn.nauk, retsenzent; GARKUNOV, D.N., doktor
tekhn. nauk, red.

[Design of friction brakes] Raschet friktsionnykh tormozov.
Moskva, Izd-vo "Mashinostroenie," 1964. 227 p.
(MIRA 17:6)

KOSTERIN, Yu.I., kand.tekhn.nauk; BYSTROV, P.G.; MIKHAYLOV, V.V.

Some data on effective performance of motor-vehicle brake linings.
Avt.prom. 31 no.7:17-18 J1 '65. (MIRA 18:8)

1. Vsesoyuznyy nauchno-issledovatel'skiy i konstruktorsko-
tekhnologicheskoy institut asbestovykh tekhnicheskikh izdeliy.

KALMANSON, S.Ya., prof.; KOSTERINA, A.P., assistant

Quantity and quality of ensilage as related to the time of corn
harvesting. Sbor. nauch. trud. Ivan. sel'khoz. Inst. no.19:
78-91 '62. (MIRA 17:1)

1. Kafedra kormleniya sel'skokhozyaystvennykh zivotnykh Ivanovskogo
sel'skokhozyaystvennogo instituta.

KOSTERINA, A.P., assistant; KUDASOV, L.P., dotsent

Effect of the frequency of feeding on the growth of young
fattening swine. Sbor.nauch.trud. Ivan.sel'khoz.inst. no.16:
144-150 151-157 (missing) '58. (MIRA 13:11)

1. Kafedra kormleniya sel'skokhozyaystvennykh zhivotnykh
Ivanovskogo sel'skokhozyaystvennogo instituta.
(Swine--Feeding and feeds)

L 2250-66 EWP(t)/EWP(b)---IJP(c)---JD/JG

ACCESSION NR: AP5017438

PO/0046/65/010/001/0035/0049

AUTHOR: Karniewicz, Wieslawa (Karnevich, V.); Liniecki, Julian (Linetski, Yu.); Kosterkiewicz, Andrzej (Kosterkevich, A.)

TITLE: Caesium-137 in population of Lodz in 1963 and 1964

SOURCE: Nukleonika, v. 10, no. 1, 1965, 35-49

TOPIC TAGS: cesium, radioisotope, radiation biologic effect, potassium, radiobiology, health

ABSTRACT: The whole-body counter at the Institute of Occupational Medicine in Lodz is described in detail. The in vivo calibration for Cs-137 and for potassium was performed using Cs-132 and K-42 as well as potassium chloride. Details of the calibration procedure are given. Cs-137 body level of adult, professionally non-exposed subjects of both sexes, inhabitants of Lodz was measured four times. In the spring and fall of 1963 and 1964 the Cs-137; potassium ratio was 133, 181, 178, and 200 pC/K, respectively. "The authors wish to thank all Colleagues from the staff of the Institute who took part in the calibration of the counter, and Miss Krystyna Misiak for the technical assistance." Orig. art. has: 4 figures, 7 tables, 7 graphs, 3 formulas.

Cord 1/2

L 2250-66

ACCESSION NR: AP5017438

ASSOCIATION: Department of Radiological Protection, Institute of Occupational
Medicine, Lodz

SUBMITTED: 24Mar64

ENCL: 00

SUB CODE: NP, LS

NR REF SOV: 000

OTHER: 032

NATS

Card *dg*
2/2

KOSTERMANS, A.I.G.G. [Kostermans, A.J.G.H.]

Identity of *Lethedon* Spreng. (Thymelaeaceae). Bot. zhur. 48
no.6:830-833 Je '63. (MIRA 17:1)

1. Lesnoy issledovatel'skiy institut, Bogor, Indoneziya.

KOSTEROV, P.M.

Replacing bronze worm gears with cast-iron gears. Mashinostroitel'
no.12:17 D '60.

(Gearing, Worm)

(MIRA 13:12)

KCSTERUK, P. I.

Kilns

Mechanization of filling the kiln and
unloading the brick in annular kilns.
Biul. stroi, tekhn. 9, no. 11, 1952

9. Monthly List of Russian Accessions, Library of Congress, October ² 195~~3~~, Uncl.

ROSTER, P. I.

①
1225. Experience in the mechanization of setting and drawing annular and other kilns.
P. I. KOSTILUK (Glass & Ceramics, Moscow, 10, No. 11, 22, 1953). The author suggests
an improved system for transporting perforated bricks and hollow blocks within the
plant. (16 figs.)

mf

DEMESHIN, V.P.; ^AKOSTETSKAYA, I.; NOVIKOV, A.I.; POZIN, N.V.; KASHIRIN, V.A.

List of Russian and translated literature on telemetering for 1950-
1954. Avtom. i telem. 16 no.4:409-410 J1-Ag '55. (MLRA 9:2)
(Bibliography--Telemetering)

KOSTETSKAYA, I. A.; Kashirin, V. A.; Posin, N. V.

"Telephasometer" (Telefazometr) from the book Telemechanization in the National Economy, pp. 310-314, Iz. AN SSSR, Moscow, 1956

(Given at meeting held in Moscow 29 Nov to 4 Dec 54 by Inst. of Automatics and Telemechanics)

KOSTETSKAYA, Irina Vladimirovna; VASIL'YEVA, Ye., red.; SHLYK, M.,
tekh. red.

[Common cabbage seed production] Semenovodstvo belokochan-
noi kapusty. Moskva, Mosk. rabochii, 1963. 60 p.
(MIRA 16:7)

(Cabbage) (Seed production)

KOSTETSKAYA, I. Ye

4707 Solovykh, A. G. i Kostetskaya, I. Ye. Razvedeniye Krolikov. Simferopol', krymizdat, 1954. 68S. s ill 20 sm. 3000 ekz 80K.- bibliogr: S. 63- (54-58114)P 636.92 (47.79)/(016.3)

SO: Letopis'Zhurnal nyph Statey, Vol 7, 1949

ACC NR: AP6034473

(N)

SOURCE CODE: UR/0392/66/000/005/0093/0094

AUTHOR: Drobinskiy, A. D. (Zaporozh'ye); Rostapshev, M. F. (Zaporozh'-ye); Bateyko, V. Ya. (Zaporozh'ye); Kostetskaya, V. M. (Zaporozh'ye)

ORG: none

TITLE: Nervous system disorders after antirabies vaccination

SOURCE: Kazanskiy meditsinskiy zhurnal, no. 5, 1966, 93-94

TOPIC TAGS: vaccine, rabies, nervous system disease, *immunology*

ABSTRACT: Cerebral paralysis, meningoencephalitis, meningoencephalo-myelitis, radiculomyelitis, ganglioradiculoneuritis, polyneuritis, and neuritis have been observed during administration of antirabies vaccine. Since 1947, antirabies gamma globulin has been used, with prior desensitization, for treatment of complications. However, this treatment may aggravate allergic postvaccinal encephalomyelitis. Among 15 of the authors' patients, the first complications appeared after 6-12 vaccinations in eight cases, after the 19th-22nd in two, and after the 32nd to 42nd injections in five. Initial complaints varied, including headache, general weakness, and other symptoms. Encephalitis occurred in three cases, encephalomyelitis in five, encephalomyelopolyradiculoneuritis in six, and myelitis in one. The course of the complications varied. In

Card 1/2

UDC: 616.8-616.988.21-614.47

ACC NR: AP6034473

some, recovery followed termination of vaccination and brief treatment;
in others, illness was prolonged and serious, with death in two cases.
[W.A. 50]

SUB CODE: 06/ SUBM DATE: none

Card 2/2

ACC NR: AP6034473

(N)

SOURCE CODE: UR/0392/66/000/005/0093/0094

AUTHOR: Drobinskiy, A. D. (Zaporozh'ye); Rostapshev, M. F. (Zaporozh'-ye); Bateyko, V. Ya. (Zaporozh'ye); Kostetskaya, V. M. (Zaporozh'ye)

ORG: none

TITLE: Nervous system disorders after antirabies vaccination

SOURCE: Kazanskiy meditsinskiy zhurnal, no. 5, 1966, 93-94

TOPIC TAGS: vaccine, rabies, nervous system disease, immunology

ABSTRACT: Cerebral paralysis, meningoencephalitis, meningoencephalomyelitis, radiculomyelitis, ganglioradiculoneuritis, polyneuritis, and neuritis have been observed during administration of antirabies vaccine. Since 1947, antirabies gamma globulin has been used, with prior desensitization, for treatment of complications. However, this treatment may aggravate allergic postvaccinal encephalomyelitis. Among 15 of the authors' patients, the first complications appeared after 6-12 vaccinations in eight cases, after the 19th-22nd in two, and after the 32nd to 42nd injections in five. Initial complaints varied, including headache, general weakness, and other symptoms. Encephalitis occurred in three cases, encephalomyelitis in five, encephalomyelopolyradiculoneuritis in six, and myelitis in one. The course of the complications varied. In

Card: 1/2

UDC: 616.8-616.988.21-614.47

ACC NR: AP6034473

some, recovery followed termination of vaccination and brief treatment;
in others, illness was prolonged and serious, with death in two cases.
[W.A. 50]

SUB CODE: 06/ SUBM DATE: none

Card 2/2

KOSTETSKAYA, Ye.T., inzhener; KAN-KHUT, E.D., inzhener.

Safety pentice in deepening existing mines. Ugol' 31 no.2:24-28
F '56. (MLRA 9:5)

(Coal mines and mining--Safety measures)

POLYAKOV, A.I.; KOSTETSKAYA, Ye.V.

Poikilitic sodalite syenites of the Lovozero alkali tundras;
some problems in petrology and geochemistry. Izv. AN SSSR.
Ser. geol. 30 no.6:16-25 Je '65.

(MIRA 18:6)
1. Institut geokhimii i analiticheskoy khimii im. V.I. Vernadskogo
AN SSSR, Moskva.

KOSTETSKIY, B.I.; KUCHERYAVYY, O.I.; KUYUN, A.I.

Structure and properties of steel surface subjected to grinding.
Trudy Sem.po kach.poverkh. no.5:283-291 '61. (MIRA 15:10)
(Grinding and polishing)

ACC NR: AP7004184

SOURCE CODE: UR/0369/66/002/006/0664/0667

AUTHOR: Nazarenko, P. V.; Zaytsev, O. V.; Kostetskiy, B. I.

ORG: Kiev Institute of Engineers of Civil Aviation (Kiyevskiy institut inzhenerov grazhdanskoy aviatsii)

TITLE: Effect of initial dislocation density on external friction force and the ratio between elastic and plastic deformations

SOURCE: Fiziko-khimicheskaya mekhanika materialov, v. 2, no. 6, 1966, 664-667

TOPIC TAGS: crystal dislocation, elastic deformation, plastic deformation, friction

ABSTRACT: The process of external friction between solids is chiefly represented by elasto-plastic deformation. In this connection, the deformation of NaCl monocrystals (which have a simple cubic lattice that clearly reveals dislocation and are sufficiently photoactive for examining their deformation in polarized light) was estimated with the aid of a specially designed machine which makes it possible to determine the elastic and plastic components of deformation according to the illumination intensity of double-refraction bands directly in the process of friction under both static and dynamic loads. Dislocation density was determined according to etching pits. Findings: the initial dislocation density of the materials in friction markedly affects the relationship between the plastic and elastic deformations arising in the process

Card 1/2

ACC NR: AP7004184

of friction. When the dislocation density is at a minimum or at a maximum, the elastic component accounts for the greater part of the total deformation. When the dislocation density is medium, the plastic component accounts for the greater part of the total deformation. The friction coefficient is higher in the materials which during friction are subject to considerable plastic deformation. The initial dislocation density influences the formation of the friction force inasmuch as it influences the magnitude of and ratio between the elastic and plastic components of the deformation arising during friction, with the magnitude of the plastic deformation being the principal factor. Orig. art. has: 4 fig.

SUB CODE: 13, 11/ SUBM DATE: 29Jul66/ ORIG REF: 003.

Card 2/2

ACC NR: AP6036826

(N) SOURCE CODE: UR/0021/66/000/011/1416/1417

AUTHOR: Kostets'kyi, B. I.; ^{Kostets'kyi, B. I.} Ivzhenko, I. P.; Boyko, A. S.

ORG: Institute of Civil Aviation Engineers (Instytut inzheneriv tsyvil'noyi aviatsiyi)

TITLE: Diffusion phenomena in plastic deformation of friction surfaces

SOURCE: AN UkrSSR. Dopovid, no. 11, 1966, 1416-1417

TOPIC TAGS: metal diffusion, metal plastic deformation, metal friction, friction surface, friction surface deformation

ABSTRACT: The chemical composition of the surface layer of an L62 brass specimens subjected to friction tests in couple with heat-treated ShKh15 steel specimens has been studied. It was found that plastic deformation of brass induced by friction was accompanied by a diffusion of the greater mobility component, in this case zinc, to the friction surface. The depth of the diffusion-affected zone and the degree of heterogeneity depended on the specific stress and the rate of relative motion. The maximum concentration of zinc was found to be at the surface of the specimen (see Fig. 1). Orig. art. has: 1 figure.

Card 1/2

ACC NR: AP6036826

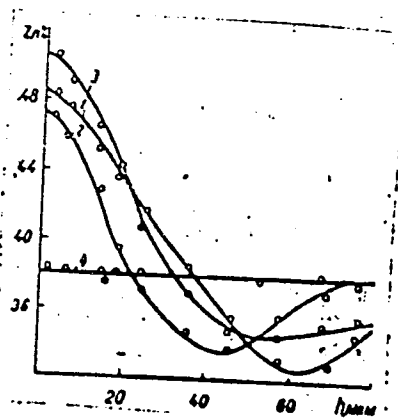


Fig. 1. Variation of zinc content along the depth of diffusion zone

1 - Relative displacement velocity 0.003 m/sec, surface layer temperature 20C, specific load 0.40 n/m²; 2 - same but a specific load of 0.20 n/m²; 3 - relative displacement velocity 5 m/sec, surface layer temperature 150C, specific load 0.001 n/m²; 4 - initial specimen.

SUB CODE: 11,20/ SUBM DATE: 03Dec65/ ORIG REF: 007/ OTH REF: 003/

Card 2/2

L 40304-66 ENT(m)/ENP(w)/T/ENP(t)/ETI IJP(c) JD/DJ

ACC NR: AP6009613

SOURCE CODE: UR/0369/66/002/001/0098/0104

AUTHORS: Kostetskiy, B. I.; Kolesnichenko, N. F.

ORG: Kiev Institute of Civil Aviation Engineers (Kiyevskiy institut inzhenerov grazhdanskoy aviatsii)

TITLE: Plastic deformation and friction surface topography

SOURCE: Fiziko-khimicheskaya mekhanika materialov, v. 2, no. 1, 1966, 98-104

TOPIC TAGS: metal friction, friction surface, metal surface, plastic deformation

ABSTRACT: The importance of the topography of the friction surface and of the plastic deformations which occur during metal on metal friction are discussed qualitatively. After a review of the literature on the effects of local plastic deformations on friction it is established that the friction surface topography is of primary importance in the development of friction and antifriction theory. The specifics of surface topography formation were investigated by uniaxial tensile and compressive deformation of specimens with and without oxidation layers and with and without static and dynamic friction. The results of the studies are not discussed in detail but sample photographs of α -brass surface topography (interferograms) are presented for different friction conditions. Sample interferograms of lead, copper, zinc, and cadmium surfaces sliding on steel 45 are also presented. Orig. art. has: 6 figures.

SUB CODE: 11,20/mcp

SUBM DATE: 07Sep65/

ORIG REF: 012/

OTH REF: 001

L 25838-66 EWT(m)/EWP(w)/T/EWP(t) LJP(c) JD/WB/DJ

ACC NR: AP6008702

SOURCE CODE: UR/0380/65/000/006/0096/0103

AUTHORS: Kostetskiy, B. I. (Kiev); Nosovskiy, I. G. (Kiev); Nikitin, L. V. (Kiev)

ORG: none

TITLE: The role of oxygen in sliding friction //SOURCE: Mashinovedeniye, ²⁷no. 6, 1965, 96-103TOPIC TAGS: friction, metal hardness, metal oxidation, metal wear, oxidation, steel/
45 steel, 60 steel, U10 steel

18

ABSTRACT: A study is made of certain aspects of oxidation of metal surfaces under sliding friction. A review of research in this field is given, including references to fifteen research articles. Three effects are dealt with in the current article: 1) the effect of the degree of rarefaction of the air (the quantity of oxygen in the friction zone) on the quantitative and qualitative characteristics (form and intensity) of wearing with air rarefaction of 10^{-5} mm Hg; 2) the effect of external mechanical influences (the rate of slip and the unit pressure) on the development mechanism of the processes of friction and wearing with air rarefaction of 10^{-5} mm Hg; 3) the effect of the mechanical properties of the friction surface (hardness) on the development mechanism of friction and wearing processes with air rarefaction of 10^{-5} mm Hg.

//

Card 1/2

UDC: 546.21+621.891

L 25838-66

ACC NR: AP6008702

Cylindrical specimens of external diameter 45 mm, internal diameter 36 mm, and height 6 mm were prepared from steels 45, 60, and U10 heat treated to achieve the desired hardness. Plots of test measurement data are given. The authors conclude that previous studies of the oxidation effect were not optimal in terms of isolating the development of friction and wearing processes. Rarefaction in general increases the intensity of wearing. Additional conclusions relate to the mechanical and chemical processes of wearing. The authors suggest the use of oxygen control in reducing friction wearing. Orig. art. has: 9 figures.

SUB CODE: 11/

SUBM DATE: 14Jan65/ ORIO REF: 015

Card 2/2 *HW*

KOSTETSKIY, Boris Ivanovich, doktor tekhn. nauk; KOSOVSKIY, Igor'
Georgiyevich, kand. tekhn. nauk; FREYS, G.A., doktor tekhn.
nauk, reisenzent

[Wear resistance and antifriction properties of machine
parts] Iznosostoikost' i antifriktsionnost' detalei ma-
shin. Kiev, Tekhnika, 1965. 205 p. (MIRA 18:10)

KOSTETS'KIY, B.I. [Kostets'kyi, B.I.]; ZAPOPOZHETS, V.V. [Zaporozhets', V.V.]

Analysis of the vibration spectrum in the case of external friction. Dop. AN URSR no.10:1298-1300 '64.

(MIRA 17:12)

1. Institut Grahhdanskogo vozdušnogo flota. Predstavleno akademikom AN UkrSSR K.K. Khrenovym [Khrienov, K.K.].

KOSTETSKIY, B.I.; KOLESNICHENKO, I.F.; OSTROVOY, Yu.D.; NATANSON, M.E.;
SKARCHENKOV, K.Z.; TOPEKHA, P.K.

Additives to lubricating oils and their effect in friction.
Fiz.-khim. mekh. mat. 1 no.1:32-39 '65. (MIRA 19:1)

1. Kiyevskiy institut grazhdanskoy aviatsii. Submitted September 15,
1964.

KOSTETSIIY, B.I.; NAZARENKO, P.V.

Dislocation structure in static and kinetic friction. Fiz.-khim.
mekh. mat. 1 no.1:73-77 '65. (MIRA 19:1)

1. Kiyevskiy institut grazhdanskoy aviatsii. Submitted September
15, 1964.

KOSTETSKIY, B.I. (Kiyev); NOSOVSKIY, I.G. (Kiyev); NIKITIN, L.V. (Kiyev)

Role of oxygen in sliding friction. Mashinovedenie no.6:96-103
165. (MIRA 18:11)

L 21174-66 ENT(1)/EMP(a)/ENT(m)/ENA(d)/T/EMP(t) JP(a) JD/WW/JG/DJ/WR
 ACC NR: AP6009608 (A) SOURCE CODE: UR/0369/66/002/001/0067/0071

AUTHOR: Belitskiy, M. Ye.; Kostetskiy, B. I. 5/6

ORG: Kiev Civil Aviation Engineering Institute (Kiyevskiy institut inzhenerov
 grazhdanskoy aviatsii) 1/5

TITLE: A study of dry friction of some cermets at high sliding speeds 1/6

SOURCE: Fiziko-khimicheskaya mekhanika materialov, v. 2, no. 1, 1966, 67-71

TOPIC TAGS: cermet, bearing, antifriction additive, graphite lubricant, dry
 lubricant

ABSTRACT: The usefulness of packing material is determined by the absence of excessive hardness, high heat resistance, and good antifriction properties. The authors investigated the qualitative and quantitative aspects of dry friction in cermets S-120 and UMB-4s at sliding speeds from 5 to 100 m/sec. At high sliding speeds the upper levels of the packing material develop high temperatures, leading to substantial changes in the structure and properties of the material. Oxide films which are formed at high temperatures tend to prevent the occurrence of seizing. Graphite⁵ and boron nitride were used as antifriction additives. At sliding speeds above 70 m/sec graphite burns out as a result of the high temperatures developed. Boron nitride²⁷ proved to be chemically more stable throughout the entire range of speeds investigated. Orig. art. has: 2 figures. [VS]

Card 1/2

L 21174-56

ACC NR: AP6009608

SUB CODE: 11/ SUBM DATE: 15Oct64/ ORIG REF: 001/ ATD PRESS: 4222

Card

212 BK

KOSTETSKIY, B.I. [Kostets'kyi, B.I.]; NATANSON, M.E.; SKARCHENKOV, K.Z.;
TOPEKHA, P.K.

Selection of additives for lubricating oils. Dop. AN URSR
no.11:1494-1497 '64. (MIRA 18:1)

1. Kiyevskiy institut Grazhdanskogo vozdušnogo flota.
Predstavleno akademikom AN UkrSSR F.D. Ovcharenko.

L 14860-65 EMT(m)/EMP(t)/EMP(b) SSD/AFWL EN/JD

ACCESSION NR: AP4049132

S/0020/64/159/001/0066/0067

AUTHORS: Kostetskiy, B. I.; Nazarenko, P. V. B

TITLE: Connection between the force of external friction and the normal pressure as related to changes in the dislocation structure (the Amonton-Coulomb law) B

SOURCE: AN SSSR. Doklady*, v. 159, no. 1, 1964, 66-67, and insert facing p. 66

TOPIC TAGS: friction, dislocation structure, normal pressure, external friction, surface phenomenon

ABSTRACT: Inasmuch as none of the earlier investigations took account of the connection between the processes occurring on a friction surface and the internal structure of real solids, the authors studied the connection between the external friction force, the normal pressure, and the dislocation structure of the rubbing bodies and advance

Card 1/3

L 14860-65

ACCESSION NR: AP4049132

the hypothesis that the friction force is connected with the dislocation structure occurring on the friction surface. As evidence they cite the experimentally established facts that the dislocation density is proportional to the degree of deformation and that the main factor governing the friction force in crystalline bodies is the occurrence, motion, and interaction of dislocation. Consequently a change in normal pressure should unavoidably cause corresponding changes in the dislocation structure. The character of correspondence between the friction force and changes in the dislocation structure was investigated experimentally for different alkali-halide crystals, zinc, and Armco iron. The friction was produced in two ways -- by moving an indenter over the surface and by rubbing two crystal surfaces. The results confirm the increase in friction force and dislocation density with increasing pressure, and show that there is an upper limit beyond which the dislocation density will not increase with increasing pressure, for no more dislocations are generated. This limit also explains the limited applicability of the Coulomb-

Card 2/3

L 14860-65

ACCESSION NR: AP4049132

Amonton friction law. This report was presented by A. A. Blagonravov.
Orig. art. has: 2 figures.

ASSOCIATION: Kiyevskiy institut grazhdanskogo vozdušnogo flota
(Kiev Institute of Civil Aviation)

SUBMITTED: 03Apr64

ENCL: 00

SUB CODE: ME, SS

NR REF SOV: 008

OTHER: 001

Card 3/3

L 00313-66 EWT(m)/EPF(c)/T BW/DJ/GS

ACCESSION NR: AT5020432

UR/0000/65/000/000/0057/0060

AUTHORS: Kostetskiy, B. I.; Natanson, M. E.; Skarchenkov, K. Z.; Topekha, P. K.

TITLE: Choice of additives for lubrication oils

SOURCE: AN SSSR. Nauchnyy sovet po treniyu i smazkam. Teoriya smazochnogo deystviya i novyye materialy (Theory of lubricating action and new materials). Moscow, Izd-vo Nauka, 1965, 57-60

TOPIC TAGS: lubricant, lubricant additive, additive / KIGVF 1 additive, KIGVF 2 additive, MS 20 lubricating oil, KE 4 friction apparatus

ABSTRACT: New, highly effective lubrication oil additives consisting of rhodanides and dithionates of copper, iron, cobalt, and manganese, as well as complex sulfur- and fluorine-containing compounds (KIGVF-1, KIGVF-2), were developed. These additives were tested in aviation oil MS-20 over a range of conditions on friction machine KE-4 (B. I. Kostetskiy. Soprotivleniye iznashivaniyu metallov. M., Mashgis, 1959). It was found that addition of copper rhodanide decreased wear by a factor of 2 (at $V = 300$ rpm, $P = 40$ kg/cm²), doubled the maximum possible load (to 2750 kg/cm²), and quadrupled the speed at which binding occurs

Card 1/2

L 00313-66

ACCESSION NR: AT5020432

(to 13.10 m/sec) as compared with MS-20 performance without additives. Addition of KIGVF-1 (optimum concentration corresponds to 0.5-1.5% S in oil) gave corresponding improvement factors of 4-7, 1.6-2.1, and 4.5; KIGVF-2 (0.45-1.5% concentration) gave 2-3, 1.3-1.9, and 2- to 4-fold improvements. Since the effectiveness of these additives depends on their chemical interaction with the surface, spectral analysis was performed to determine the Fe, C, N, S content in the external layers of the bearing surface. It was found that if for pure MS-20 the concentration of Fe, C, N, and S was 1, 1, 1, and 1, then addition of Cu rhodanide resulted in values of 0.81, 1.8, 9, and 4; addition of KIGVF-1 gave 0.70, 2.1, 5, and 2.5 respectively. Orig. art. has: 2 tables.

ASSOCIATION: Nauchnyy sovet po treniyu i smazkan, AN SSSR (Scientific Committee on Friction and Lubrication, AN SSSR)

SUBMITTED: 22May65

44
ENCL: 00

SUB CODE: FP

NO REF SOV: 010

OTHER: 000

dy
Card 2/2

L 00472-66 EWT(m)/EWP(w)/EPF(c)/ENA(c)/ENA(d)/I/EWP(t)/EWP(z)/EWP(b)/ETC(m)

MJW/BW/JD/DJ/GS

ACCESSION NR: AT5022670

UR/0000/65/000/000/0125/0127

AUTHOR: Kostetskiy, B. I.^{AA}; Zaporozhets, V. V. 4A

TITLE: Analysis of the vibration spectrum in external friction¹¹

SOURCE: AN SSSR. Nauchnyy sovet po treniyu i smazkam.¹⁸ Teoriya treniya i iznosa (Theory of friction and wear). Moscow, Izd-vo Nauka, 1965, 125-127

TOPIC TAGS: friction, friction coefficient, vibration analysis, mechanical vibration, vibration measurement, vibration spectrum, vibration test^{9m}

ABSTRACT: A method is presented for analyzing the processes occurring in the zone of friction by applying a harmonic analysis of the frictional force oscillations. This force is considered as the total index of the elastoplastic deformations in the rubbing layers and of the resulting physical, chemical and mechanical processes. In this work the frequencies of oscillation were measured in cps and the amplitudes in mv (or decibels). The pair of materials in friction were U8¹⁸ -- 45 steel, 40Kh steel -- BRAZh-9-4 bronze, and others. The experiments were conducted with and without lubricants. After each experiment the specimens were studied quantitatively and qualitatively by metallographic spectral x-ray, and other methods. The specific vibration characteristics of each shaft-bearing

1/2

Card

L 00472-66

ACCESSION NR: AT5022670

2
system were taken into consideration. Frequencies and amplitudes registered for a U8 -- 45 steel system operating at various velocities and loads and with 3 types of surface lubricants (vaseline oil; vaseline oil with 0.5% of oleic acid; oleic acid) are tabulated. Two sets of frequency-amplitude records for shaft-bearing systems operating at various loads and velocities are presented. By comparing these records with the results of the analysis of the specimens, the authors deduce which component element of the total frictional force operates or predominates at a given velocity-load condition. Orig. art. has: 1 table and 2 graphs.

ASSOCIATION: none

SUBMITTED: 18May65

ENCL: 00

SUB CODE: IE

NO REF SOV: 005

OTHER: 000

KC
Card 2/2

L 28742-65 EWT(l)/EWT(m)/EWT(w)/EWA(d)/EPR/T/EWP(t)/EWP(b) Pg. 4 IJP(c) JD
ACCESSION NR: AP5004198 S/0020/65/160/001/0088/0090

AUTHORS: Kostetskiy, B. I.; Nazarenko, P. V.

TITLE: Interaction of surfaces ²¹ during external friction of crys-
talline bodies _{Ab}

SOURCE: AN SSSR. Doklady, v. 160, no. 1, 1965, 88-90, and top half
of insert facing p. 88

TOPIC TAGS: friction, dislocation motion, dislocation interaction

ABSTRACT: The purpose of the investigation was to study the relation
between the surface states and the internal structures of bodies in
friction. The authors investigated the changes connected with the
action of normal and tangential forces, the interaction between sur-
faces under static contact and motional friction, and the qualita-
tive picture of formation of the surface bonds. The dislocation

Card 1/3

L 28742-65

ACCESSION NR: AP5004198

3

structure in the substance was investigated by means of the etch pits corresponding to the emergence of dislocations to the surface and by studying the slip bands. It is deduced that the jogs resulting from deformation of the metal give rise to the formation of surface bonds and friction forces. To confirm this point of view, the friction force was measured for indium sliding over highly polished surfaces of plates made of stainless steel, aluminum, and brass. The plates were then deformed by 1% tension and the friction force was again measured. After the deformation of the plates, the friction coefficient increased from 0.3, 1.25, and 1.5 to 1.75, 4.5, and 5.2 for stainless steel, aluminum, and alpha brass, respectively, although the micro-geometry of the surface of the plates remained practically unchanged. It is concluded therefore that in external friction of crystalline bodies a unique submicrorelief appears on the friction surfaces as a result of the external forces, and is the consequence of motion and interaction of dislocation. Orig. art. has: 3 figures and 1 table. This report was presented by A.A. Blagonravov.

Card

2/3

L 28742-65

ACCESSION NR: AP5004198

ASSOCIATION: Kiyevskiy institut grazhdanskogo vozdukhogo flota
(Kiev Institute of Civil Air Fleet)

SUBMITTED: 03Apr64

ENCL: 00

SUB CODE: SS, ME

NR REF SOV: 004

OTHER: 002

Card

3/3

L 54/15-65 EWG(j)/ENT(m)/ENP(w)/EPF(c)/EPR/ENA(d)/T/EAP(')/ENP(b) Pr-4/ps-4 IJP(c)
 ACCESSION NR: AP5015421 JD/DJ UR/0020/65/162/004/0803/0805

AUTHOR: Kostetskiy, B. I.; Mamin, G. N.

TITLE: The dual role of oxygen in rolling friction

SOURCE: AN SSSR. Doklady, v. 162, no. 4, 1965, 803-805,

TOPIC TAGS: ball bearing, roller bearing, bearing wear, bearing behavior, vacuum behavior, atmosphere behavior

ABSTRACT: The effect of oxygen on the friction and abrasion in rolling contact bearings has been studied. P36203E bearings were tested under an axial load of 100 kg at 1400 rpm for 120,000 revolutions in air under pressures of 760— $5 \cdot 10^{-5}$ mm Hg. The obtained data showed that minimum wear occurs at pressures from 0.1 to 1 mm (See Fig. 1 of the Enclosure), when rolling surfaces become smooth and all the roughness left after machining is eliminated. At air pressures from 1 to 760 mm Hg, intensive wear takes place and brittle secondary structures form, which then desintegrate under repeated contact load. At air pressures 10^{-2} to $5 \cdot 10^{-5}$ mm Hg, intensive wear occurred owing to the formation of points of intensive seizing between the contact surfaces. To reduce the wear at air pressures from 1 to 760 mm Hg, the amount of plastic deformation in contact surface layers should

Card 1/3

L 54815-65

ACCESSION NR: AP5015421

be decreased and the surfaces should be protected from atmospheric oxygen. At air pressures from 10^{-2} to $5 \cdot 10^{-5}$ mm Hg, contact surfaces should be protected with coatings which replace the oxide films forming under normal conditions. Orig. art. has: 4 figures. [WW]

ASSOCIATION: none

SUBMITTED: 13Feb65

ENCL: 01

SUB CODE: MM, A5

NO REF SOV: C14

OTHER: 000

ATD PRESS: 4029

Card 2/3

L. 51.915-65

ACCESSION NR: AP5015421

ENCLOSURE: 01

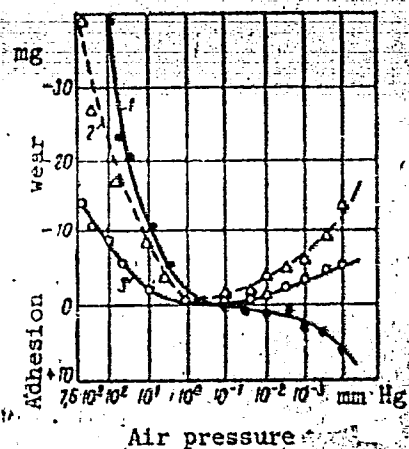


Fig. 1. Dependence of the wear of rolling contact bearing parts on oxygen content (air pressure) in the friction contact zone

1 - Ball; 2 - inner ring; 3 - outer ring.

Card 3/3

L 11423-66 EWT(m)/EWA(d)/T/EWP(t)/EWP(z)/EWP(b) IJP(c) MJW/JD/DJ

ACC NR: AP6002115

SOURCE CODE: UR/0369/65/001/006/0675/0682

AUTHOR: Kostetskiy, B.I.; Nosovskiy, I.G.; Nikitin, L.V.

ORG: Kiev Institute of Civil Aviation Engineers (Kiyevskiy institut inzhenerov grazhdanskoy aviatsii)

TITLE: Friction and wear processes at various oxygen contents in the contact zone

SOURCE: Fiziko-khimicheskaya mekhanika materialov, v. 1, no. 6, 1965, 675-682

TOPIC TAGS: oxygen, metal friction, wear resistance, metal property, carbon steel

ABSTRACT: The object of the study was to determine the effect of oxygen content in the contact zone on the friction and wear processes, to determine the optimum oxygen content under various friction conditions, and to develop methods of controlling the degree of oxidation of the friction surfaces in order to insure a minimum wear. The experiments involved dry sliding friction on cylindrical samples of 45, 60, and U10 steels. The following conclusions were reached: (1) The extent of oxidation and the properties of the secondary structures formed depend on the amount of oxygen in the ambient air (760 mm Hg); (2) When the air pressure is lowered below 10^{-1} mm Hg, gripping takes

Card 1/2

L 11423-66

ACC NR: AP6002115

place, and as the pressure drops down to 10^{-5} mm Hg, the gripping reaches its maximum. (3) Effects of inversion in the effect of oxygen are observed when oxygen is present in the gaseous medium in amounts corresponding to air pressures from 760 to 10^{-5} mm Hg. Thus, in dry friction of carbon steels, the minimum wear rate corresponds to air pressures from 10 to 1 mm Hg; at higher or lower pressures, the wear rate increases. When there is a considerable oxygen deficiency, the chief factors determining the friction and wear processes in sliding friction are the physical and mechanical properties of the steels, chemical factors being insignificant; also great importance in these processes is the heat evolved in the friction zone. Analysis of the role of oxygen in sliding friction opens up extensive possibilities of controlling the wear resistance and antifriction properties of friction pairs by regulating the oxygen content in the friction zone, using the positive effect of heat, and considering the predominant influence of mechanical properties when the oxygen content is insufficient. Orig. art. has: 7 figures.

SUB CODE: 11 / SUBM DATE: 28Jul65 / ORIG REF: 014

Card 2/2

L 00903-67 EWT(d)/EWT(m)/EWP(w)/T/EWP(t)/ETI IJP(c) JD/WB/EM

ACC NR: AP6020912

SOURCE CODE: UR/0369/66/002/002/0162/0166

AUTHORS: Kostetskiy, B. I.; Karlashov, A. V.; Shevelya, V. V.

ORG: Kiev Institute of Civil Aviation Engineers (Kievskiy institut inzhenerov grazhdanskoy aviatsii)

TITLE: A radiographic study of the fatigue of D16AT alloy in connection with the action of media

SOURCE: Fiziko-khimicheskaya mekhanika materialov, v. 2, no. 2, 1966, 162-166

TOPIC TAGS: fatigue strength, fatigue test, aluminum alloy, x ray diffraction camera, radiography, metal stress, metal deformation / D16AT aluminum alloy, URS-50IM x ray diffraction camera

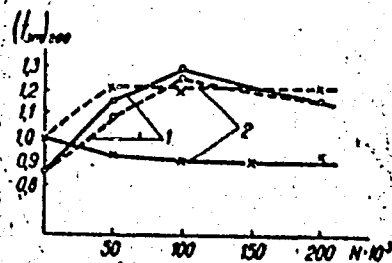
ABSTRACT: The results of a radiographic study of the fatigue of D16AT alloy are given. The alloy was studied in the annealed state (350C, 1 hr) and in the hardened state with subsequent aging. A URS-50IM diffractometer with copper K_{α} radiation was used. The hardened samples were tested under a load of 10 dyne/mm²; the annealed, 7 dyne/mm². In all cases, there was no change in the line (200) width with cyclic loading (see Fig. 1). A certain increase in microstresses was observed in testing D16AT alloy above the fatigue limit. Third-order distortions (more clearly expressed for the hardened state) were observed in the fatigue tests. Fatigue was

Card 1/2

L 00903-67

ACC NR: AP6020912

Fig. 1. Relative strength of line (200) versus number of cycles: 1 - hardened and aged; 2 - annealed. Continuous line—tests in air; dotted line—tests in 3% NaCl solution.



accompanied by crushing and block disorientation, which were more intensive in the hardened state. The adsorption-corrosion action of media is shown more clearly radiographically in the annealed alloy. Orig. art. has: 4 graphs and 2 photographs.

SUB CODE: 11/ SUBM DATE: 25Nov65/ ORIG REF: 017/ OTH REF: 001

awm

Card 2/2


~~RUZITSKIY, P. I.~~; RUZITSKIY, V. V., Engineer

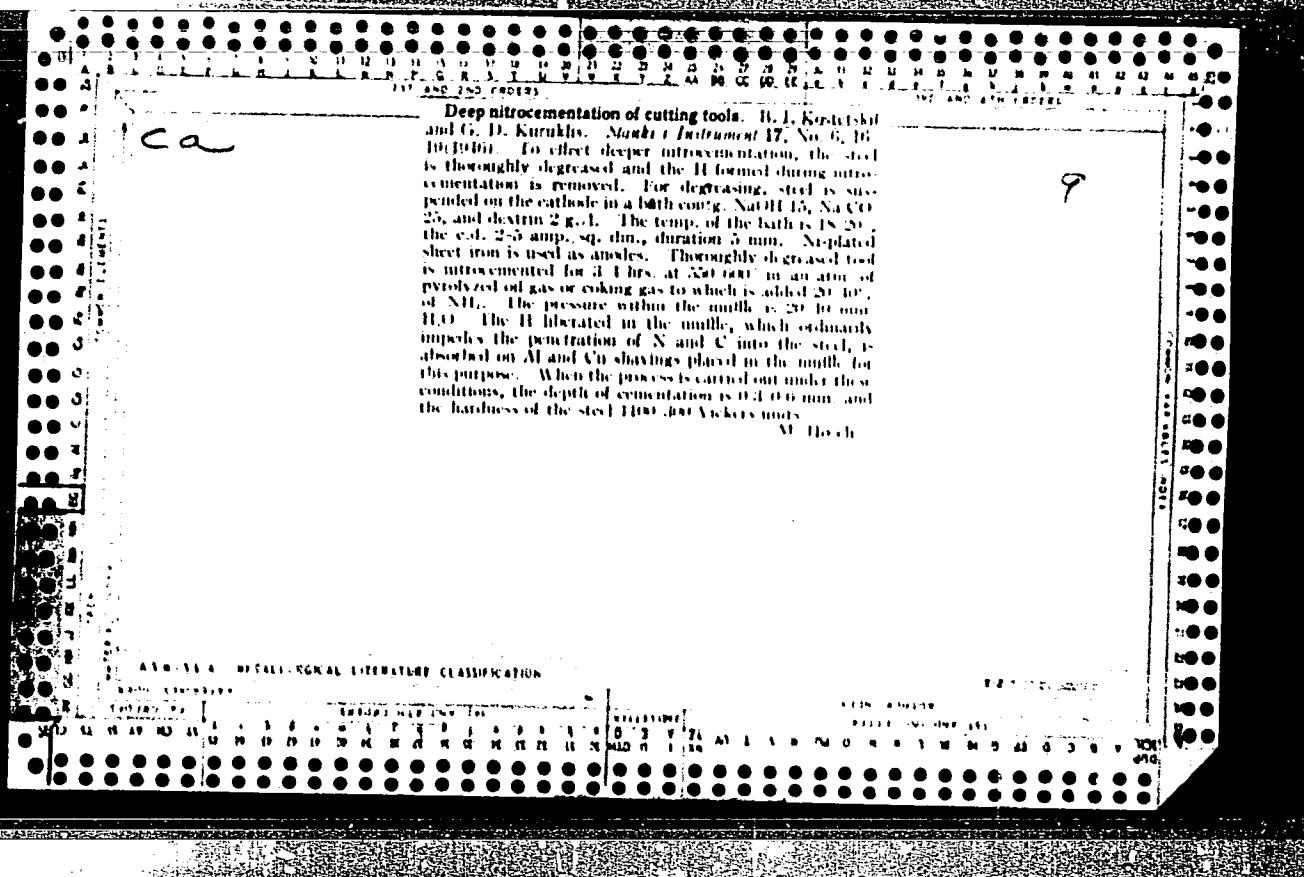
Mem., Uralmash Plant (-1945-)

Candidate of Technical Sciences

"A Bimetal Tooth-Cutting Tool," Stanki I Instrument, 16, Nos, 7-8, 1945

BR-52059019

<p>  </p>																									
<p> Microstructure and properties of cast, welded on, and forged steel RFL. H. V. Kustelski. <i>Stat</i> 6, 204-7 (1946).—Results of a study of the effect of microstructure and method of making (forging, casting, welding on) on the quality of cutting tools made of high-speed steel RFL are detailed. M. Huseh </p>																									
<p> ASME-ISA METALLURGICAL LITERATURE CLASSIFICATION </p>																									
<p> STEEL </p>													<p> STEEL </p>												
<p> STEEL </p>													<p> STEEL </p>												



1ST AND 2ND ORDER										3RD AND 4TH ORDER									
PROCESSES AND PROPERTIES INDEX																			
<p>18-241. Deep Nitriding of Cutting Tools. B. I. Kozlovsky and G. D. Kuruklis. <i>Engineers' Digest (American Edition)</i>, v. 4, Oct. 1947, p. 489-490. Results of a series of experiments including surface preparation and use of catalysts. Procedure adopted; re- sults of service tests in comparison with the old process show fourfold im- provement. (Translated and condensed from <i>Stanki i Instrument</i>, no. 6, 1946, p. 16-17.)</p>																			
<p>ASB-31A METALLURGICAL LITERATURE CLASSIFICATION</p>																			
1ST ORDER										2ND ORDER									
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20										21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40									

GROZIN, B.D.; KOSTETSKIY, B.I., kandidat tekhnicheskikh nauk.
~~mekhanicheskikh nauk~~

Wear in gear transmissions. Vest.mash. 27 no.12:23-38 D '47.
(MLRA 9:4)

1.Chlen-korrespondent AN USSR (for Grozin)
(Gearing) (Mechanical wear)

GROZIN, B.D.; KOSTETS'KIY, B.I.

Study of the microstructure of friction surfaces. Dep. AN URSR no.2:
26-33 '48. (MIRA 9:9)

1. Chlen-korrespondent AN URSR (for Grozin).
(Friction)

KOSTETSKIY, B. I.

PA76T29

USSR/Engineering

Mar 1948

Metals - Cutting

Tools, Cutting

"Physical Fundamentals of the Process of Metal Cutting," B. I. Kostetskiy, Cand Tech Sci, 3 pp

"Stanki 1 Instrument" No 3

Studies effect of external friction that occurs during cutting of metals resulting in data obtained on the state of surface layers of cutting facets of the cutting instruments after these tools had been ground and sharpened. Data also obtained on changes in physical and structural states of cutting tools.

76T29

KOSTETSKIY, B. I.

PA 3/49T40

USSR/Engineering
Microhardness Tests
Metals

Aug 48

"Methods of Measuring Microhardness During the
Study of Thin Layers of Metals," B. I. Kostetskiy,
P. K. Topekha, Inst of Constr Mech, Acad Sci.
Ukrainian SSR, 5 pp

"Zavod Lab" Vol XIV, No 8 - p. 912-77

Describes preparation of specimens and apparatus
used. Determines minimum permissible distances
between specimen edge and impression center,
and between centers of neighboring impressions.
Tabulates results. Includes microphotographs.

3/49T40

M. A.

18.

On the Question of the Physical Bases of the Metal-Cutting Process. B. I. Kostetsky (Stanki i Instrument, 1948, 19, (3), 13-15).--(In Russian). The initial condition of the surface layers of the cutting tools and the change in condition of these surface layers during the progress of the work are discussed at some length.--W.J.K.

ACCESSION NR: AT4049817

3

workability and a low coefficient of friction, while friction metals have wear resistance along with high and stable coefficients of friction. The main types of wear and hardening are grasping wear of the primary and secondary types, and wear due to oxidation, abrasion and fatigue. It is evident that the optimization of secondary or operational features requires the proper combination of primary and secondary characteristics of the surface layer. Analysis of phenomena on the surface and in the subsurface layers allows one to determine the principal requirements for hardening technology. For instance, the hardness of lead is 10 kg/mm^2 and the hardness of the oxidized layers formed by friction in an oxygen atmosphere is 100 kg/mm^2 . For rockets and space ships, the wear-resistant surfaces must be primary structures with highly stable properties which do not vary under most complicated conditions. As an example, the author discusses the method of electrolytic chrome plating. According to the method worked out by D. S. Plishko, this is carried out in a carburizer comprising 50% by weight of charcoal, 20% Na_2CO_3 and 30% iron for 3 hours at 950°C . Complex chromium carbides are formed at the surface, the hardness of which is 1800 kg/mm^2 . Electrolytic chrome plating is one of the best known methods of surface hardening. However, on the basis of work by N. L. Golego, it is shown that chromium improves

Cord 2/3

0304-06

ACCESSION NR: AT4049817

the hardness under low loads, but weakens it under medium and high loads. The application of sulfide, phosphide and other non-metallic pastes intensifies the chemical processes at the metal surfaces. Since such coatings lower the wear, these pastes should be used for primary hardening. In the GAZ-51 truck engine, the wear resistance of the cylinders and crank-shaft was increased 2.3-3.5 times after sulfiding. The proper understanding of secondary hardening and weakening of the surface layers due to friction will improve the reliability and service life of machinery and other mechanisms. Orig. art. has: 2 figures.

ASSOCIATION: None

SUBMITTED: 21May64

ENCL: 00

SUB CODE: MM

NO REF SOV: 004

OTHER: 000

Card 3/3

L 55052-65 EWT(d)/EWT(m)/EWP(w)/EPF(c)/EWP(c)/EWA(d)/EWP(v)/T/EWP(t)/EWP(k)/
EWP(b)/EWP(1) Pt-4/Pr-4 BW/JD/WB/DJ

ACCESSION NR: AT5010237

UR/2711/64/000/019/0066/0078

AUTHOR: Kostetakiy, B. I.; Topekha, P. K. 39
B+1

TITLE: Oxidative processes accompanying friction and wear of metals

SOURCE: AN SSSR. Institut mashinovedeniya. Treniye i iznos v mashinakh, no. 19, 1964.
Iznos i treniye metallov i plastmass (Wear and friction of metals and plastics), 66-78

TOPIC TAGS: metal wear, friction induced wear, oxidative environment, oxygen harden-
ing, metal wear classification

ABSTRACT: The article provides a brief review of the literature and of a research pro-
gram in effect since 1948 concerning oxidation accompanying friction and wear of actual
machine parts under operating conditions and in laboratory environments (dry friction,
peripheral lubrication). An analysis of the results on oxidative wear established that the
process represents a complex interaction of simultaneous effects of plastic flows, heating,
chemical adsorption and chemical reactions. A similar analysis of friction in neutral and
oxidative environments indicates that the intensity of wear of various metals depends on
the properties of the oxides forming during the process. Current research at the authors'
plant includes procedures for oxygen hardening. The authors comment on the classification
of types of metal wear, classification of metals and alloys by resistance to wear, and on

Card 1/2

L 55052-65

ACCESSION NR: AT5010237

suitable avenues for future research in the field. Orig. art. has: 11 figures and 1 table.

ASSOCIATION: None

SUBMITTED: 00

ENCL: 00

SUB CODE: MM, CC

NO REF SOV: 028

OTHER: 000

Card

gw
2/2

IVLEV, V.A.; KOSTETSKIY, I.I.

Magnetic methods and equipment for controlling the structure of cast iron with spheroidal graphite. Defektoskopiia 1 no.3:43-53 '65.

(MIRA 18:8)

1. TSentral'noye konstruktorsko-tekhnologicheskoye byuro Upravleniya po razvitiyu kuznechnogo-pressovogo i liteynogo mashinostroyeniya Gosudarstvennogo komiteta po mashinostroyeniyu pri Gosplane SSSR, Odessa.

KOSTETSKIY, V.

I

N/5
741.431
.K81

Stoykost' Rezhushchikh Instrumentov (Durability of Cutting Tools)
Kiyev, Mashgiz, 1949.
251 p. Illus., Diagr., Tables.
AB 520053
Literatura: p. 247-249

KOSTETSKIY, V.

I

N/5
741
.K8

Iznosostoykost' Detaley Mashin (Wear-resistant Machine Parts)
Kiyev, Mashgiz, 1950.
166 p. Diagrs., Tables.
"Literatura": p. 166-(167)

AB 520224

KOSTETS'KIY, B.I.

Chem Abn V48

1-25-54

metallurgy &
metallography

① Ind Eng

2
0
0

Investigation of friction and resistance to wear of machine parts. B. I. Kostets'kiy. *Dopovidi Akad. Nauk. Ukr. R.S.R.* 1950, No. 4, 331-6. The study included photomicrography and correlation of chem. changes with phase-rule diagrams. Wear is due to heat, oxygen diffusion, erosion, and pitting. Oxygen diffusion is intensified by, and occurs simultaneously with, plastic deformation and surface slippage. Wear due to oxygen diffusion is observed by the presence of poorly defined solid solns., eutectics, and chem. compds., as well as that of definite compds. such as FeO , Fe_2O_3 , and Fe_3O_4 .
I. Bencowitz

KOSTENOV, V. I. *Acad. Sci. USSR.*

"Resistance to Tear of Machine Components." Sub 16 May 51, Inst of Machine Science,
Acad Sci USSR.

Dissertations presented for science and engineering de recs in Moscow during 1951.

SO: Sum. No. 486, 9 May 51.

- [illegible]

- [illegible]

KOSTETSKIY, B. I.

Mechanical Wear

"Wear resistance of machine parts." Izv. AN
SSSR Otd. tekhn. nauk, no. 4, 1952.

9. Monthly List of Russian Accessions, Library of Congress, November 195²~~3~~, Uncl.

1. KOSTETSKIY, B. I.
2. USSR (600)
4. Machinery
7. Friction and wear resistance of machine parts, Sbor. trud. Inst. stroi. mekh. AN URSR, no. 16, 1952.

9. Monthly List of Russian Accessions, Library of Congress, April 1953, Uncl.

KOSTETSKIY, B. I.

Machinery

"Wear resistance of machine parts.", Reviewed
by Prof. M. M. Khrushchov, A. D. Kuritsyna,
Vest. mash., 32, no. 1, 1952

9. Monthly List of Russian Accessions, Library of Congress, October ² 19~~98~~⁹⁹, Uncl.

USSR/Engineering - Friction

11 Aug 53

"Effect of the Ratio of Frictional Area to Hardness
on Sliding Conditions in Machine Parts in Contact,"
D. N. Garkunov and I. V. Kragelskiy

DAN SSSR, Vol 91, No 5, pp 1085-1088

Utilize special equipment, designed by I. V.
Kragelskiy and B. I. Kostetskiy, which compresses
the sample between two small cylinders, to study
forces of friction. Present results in graph and
table. Presented by Acad P. A. Rebinder 11 Jun 53.

266T32

KOSTETSKIY, Boris Ivanovich; PREYS, Georgiy Aleksandrovich; YELISKEYEV, Vasily Dmitriyevich; KHEVETS, L.S., kandidat tekhnicheskikh nauk, retsenzent; SAMOKHVALOV, Ya.A., inzhener, redaktor; LEUTA, V.I., inzhener, redaktor; RUDENSKIY, YA.V., tekhnicheskii redaktor.

[Testing the wear of metals; methods and machines] Ispytanie metallov na iznos; metody i mashiny. Kiev, Gos.nauchno-tekhn. izd-vo mashinostroitel'noi lit-ry, 1955. 125 p.(MLRA 9:1)
(Metals--Testing) (Testing machines)

BRAUN, Mikhail Petrovich; KURUKLIS, Georgiy Leonidovich; DUBDO, Mariya Timofeyevna; BABUSHKINA, G.I., retsenzent; KOSTETSKIY, B.I., doktor tekhnicheskikh nauk, professor, redaktor; ~~LEVA, V.I.,~~ inzhener, redaktor izdatel'stva; RUDENSKIY, Ya.V., tekhnicheskii redaktor

[Inoculated high-speed steel] Modifitsirovannaya bystroreshushchaya stal'. Kiev, Gos. nauchno-tekhn. izd-vo mashinostoit. lit-ry, 1956. 130 p.
(Tool steel) (MLRA 9:11)

137-58-4-8322

Translation from: Referativnyy zhurnal, Metallurgiya, 1958, Nr 4, p 287 (USSR)

AUTHORS: Kostetskiy, B. I., Golego, N. L., Topekha, P. K.

TITLE: Chemical Analysis of the Surface Layers of Metal Under Various Types of Wear (Khimicheskiy analiz poverkhnostnykh sloyev metalla pri raznykh vidakh iznosa)

PERIODICAL: Tr. 1-y nauchno-tekhn. konferentsii. Kiyevsk. in-t grazhd. vozdushn. flota. Moscow, 1956, pp 208-213

ABSTRACT: A method, notable for its simplicity and accuracy, has been developed to investigate the chemical composition of surface layers subjected to friction and wear. This method consists of taking ordinary specimens having removable surface layers in the form of foil (δ 0.1-0.03 mm, U8A steel) fastened to their surfaces. Direct evidence testifying to the major role of O_2 in the development and life of the major forms of wear, and to the positive role of oxidizing wear, which is characterized by a low rate of wear, a low coefficient of friction, and a high degree of surface smoothness, have been obtained. It is shown that atmospheric N does not participate in the processes occurring in friction and wear.

N. T.

Card 1/1

1. Metals--Abrasion--Surface effects 2. Metals--Surface properties--Abrasion effects 3. Metals--Surface properties
--Chemical analysis

KOSTETSKIY, B.I., doktor tekhnicheskikh nauk; GOLEGO, N.L., kandidat tekhnicheskikh nauk; TOPEKHA, P.K., kandidat tekhnicheskikh nauk.

Chemical analysis of surface layers of metals subjected to various types of wear. Vest.mash. 36 no.10:25-26 0 '56. (MLRA 9:11)
(Mechanical wear--Testing)

KOSTETSKIY, Boris Ivanovich; PREYS, G.A., kand.tekhn.nauk, retsenzent;
GOLEGO, N.L., kand.tekhn.nauk, red.; TINYANIY, G.D., red.

[Wear resistance of machine parts] Soprotivlenie iznashivaniu
detalei mashin. Moskva, Gos.nauchno-tekhn.izd-vo mashinostroit.
lit-ry, 1959. 478 p. (MIRA 13:4)

(Mechanical wear)

(Machinery)

AUTHORS: ~~Kostetskiy, B.I.~~, Nosovskiy, I.G., Topokha, P.K.,
Trotsik, O.I. and Kareta, N.L. SOV/126-7-1-13/28

TITLE: X-Ray Investigation of the Structure of Rubbing Surfaces
(Rentgenograficheskoye issledovaniye struktury poverkhnostey treniya)

PERIODICAL: Fizika Metallov i Metallovedeniye, 1959, Vol 7, Nr 1,
pp 95-101, (USSR)

ABSTRACT: By means of a general metallographic analysis method it was established that in the course of service of steel in an oxidizing atmosphere, diffusion of oxygen atoms in steel takes place in plastically deformed layers of the parts rubbing against each other, as the result of which a layer forms on the rubbing surfaces, consisting of a solid solution of oxygen in iron and the chemical compounds FeO , Fe_2O_3 and Fe_3O_4 (Refs.1-3). These layers have been called "white unetchable layers"; however, there is no agreement yet as to their nature. After a number of investigations the authors concluded that the white layer, forming in service at high temperatures, in grinding and in

Card 1/6

SOV/126-7-1-13/28

X-Ray Investigation of the Structure of Rubbing Surfaces

rapid cutting, is a hardened structure. In order to confirm the authors' hypothesis of the nature of white layers, and to elucidate the part played by oxygen in the mechanism of oxidizing wear, the necessity arose of carrying out a complex investigation of the white layers forming during oxidizing and thermal wear. Specimens of steel St.45 and Armco iron were rubbed by sliding. The normal pressure applied to the specimen in the experiment was maintained constant (10 kg/cm^2). The rates of slip chosen were similar to those in oxidizing and thermal wear by hardening. A series of experiments was carried out in various gaseous media (air, argon, oxygen) with the aim of creating favourable conditions for the development of various aspects of wear. The preparation of the metal surface layers for the investigation was carried out under certain definite experimental conditions. The specimens were tested on the KE-2 and KE-4 machines (Ref.10). X-ray investigations, metallographic analysis and microhardness determinations of the rubbing surfaces and surface layers were carried out. This complex study was

Card 2/6

cross-section of the surface layers of the specimen, tested in an atmosphere of air, is shown. Fig.3 is a photomicrograph of the rubbing surface of a steel St45 specimen, tested in an atmosphere of air. The rate of slip was

Card 3/6